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# The role of debt, death and dispossession in world-ecological transformations: swidden commons and tar capitalism in nineteenth-century Finland

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## ABSTRACT

This article theorises about the ways in which commodity frontiers replace forest commons. New insights are offered into the role of debt, enclosures, the death of human and extra-human natures, and the role of the state in historical processes through an analysis of historical material and recent scholarship on eastern Finland's role in global capitalist expansion in the nineteenth century. The article contributes to the general study of commons and the expansion of capitalist world-ecology. We discuss how swidden commons were more sustainable than generally assumed. The article provides an original theoretical framework for studying world-ecological transformations. We argue that a study of debt, death and dispossession – which we call the three work-horses of tar capitalism – can shed new light on the expansion of commodity frontiers.

## KEYWORDS

Commodity frontiers; tar capitalism; swidden cultivation; world-ecology; debt; forest commons

## Introduction

Recent scholarship has produced a wide range of insightful histories and theoretical revisions of the origins and development of capitalism (see, e.g. Teschke 2003; Mielants 2007; Graeber 2011; Beckett 2013; Moore 2015; Malm 2016). Within this body of literature, debt has received limited attention, despite its role as an epoch-making social mechanism. Nonetheless, several important studies have clarified debt's role in historical social transformations through the adoption of *longue durée* perspectives (e.g. Graeber 2011; Hudson 2012) and through accounts of debt as a grassroots game-changer of rural economies (e.g. Muldrew 1998; Fontaine 2014; Smail 2016). Contributing to these debates, this article connects debt – in the form of rural indebtedness – to broader world-historical and world-ecological transformations taking place in the web of life (Moore 2015), and hence, causing epochal transformations at sites of capitalist expansion.

Our historical study of nineteenth-century eastern Finland draws from the above-mentioned theoretical traditions, but it also critically analyses their power to explain

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socioecological transformations. The key question driving the analysis is as follows: How was a nineteenth-century, self-sustaining rural economy based on swidden cultivation (here used as a synonym for slash-and-burn cultivation, or shifting cultivation with fire) and forest commons replaced by socially and environmentally destructive tar capitalism? To answer this question, we analyse how creating an intensive world-ecological tar frontier brought to the Nordic periphery a cycle of debt, death and dispossession – which we call the three workhorses (or the three D's) of tar capitalism.

Our case derives from the region known as Kainuu, which was one of the last and only corners of Europe where swidden cultivation was extensively practised. With its coniferous forests, peatlands, morainic soils and widespread lake and river system extending all the way from the Gulf of Ostrobothnia to the Russian border, Kainuu constitutes a geographical area larger than present-day Belgium, with a population of only approximately 30,000 people at the time. During the nineteenth century, this relatively isolated and non-hierarchical swidden region (compared to southern parts of Finland, where there were more extensive class divisions between land-owning peasants and the landless poor) was transformed into the last significant tar frontier in the modern world economy. A class division related to new power relations, one characteristic of tar capitalism, emerged between merchants and common people.

The discussion presented here of tar capitalism as a commodity frontier is based on the world-ecological understanding of such frontiers as essential zones in which capitalism can exist and expand. Commodity frontiers not only extend commodity production and exchange, but are also zones that yield extraordinary physical surpluses that can be transformed into capital (Moore 2000, 2010a, 2015). Kainuu's tar production provided the highest quality tar, which protected the Dutch and British commercial and military fleets from water damage (thus enabling the expansion of European capitalism and colonialism), from a source that entailed almost no or very low cost (peripheral forest commons).

The article begins by introducing the system of early modern forest commons and the tradition of swidden cultivation in eastern Finland. In contrast to widely shared beliefs about swidden cultivation as 'plunder cultivation', we explore the terms by which Finnish swidden commons was a high-yielding and sustainable form of *commoning* (communal modes of production that are based on existing commons and that produce new commons), as studied and theorised by historian Peter Linebaugh (2008, 2014) and others (e.g. De Angelis and Harvie 2014; Federici and Caffentzis 2014; De la Cadena 2015; Toivanen 2015b). We link this new take on local Finnish historical developments to contemporary moments of swidden conflicts in other parts of the world currently undergoing a similar kind of large-scale forestland conversion (Fox et al. 2009; Scott 2009; van Vliet et al. 2012; Thaler and Anandi 2017). We analyse how common management of the forests formed the foundation for a 'lived environment' (see Taylor 2014) of human and extra-human natures that was radically different from modern conceptions and practises assigned to both humans and the rest of nature. Taylor (2014, 62) argues for the need to add a concrete sense of place and society to the current abstract notions of nature and seeks answers to the question, 'what social cleavages and forms of power are built into and reproduced within the resulting lived environments?'

The article then proceeds by examining how Kainuu experienced an extractive type of world-systemic power constellation that we identify as 'the trinity of tar capitalism': European imperialism, the debt- and dispossession-making state, and Nordic merchant capital.

We describe how the advance of the tar frontier was part of a specific world-historical and national conjuncture during the 'long nineteenth century'. Particular attention is given to the 1860s, which scholars of Finnish economic history typically consider the decade marking an epochal turning point for the whole country (Alapuro 1988, 30; Hjerppe 1989, 19). By focusing on the peripheral region of Kainuu, we demonstrate that the other side of the coin of this 1860s epochal shift was the enclosure of the common lands, the creation of a class society, death brought by disastrous famine and a degradation of lived environments.

While our starting point is a focus on debt-driven historical processes, we also show how the role of debt can only be properly understood in connection with a wider constellation of social forces, such as state-led dispossession strategies. Thus, we also expand the analysis of the capitalist 'environment-making state' (Parenti 2015) to include debt-enforcing and dispossession-making strategies. An analysis of the role of rural indebtedness in the evolution of capitalism makes it possible to combine theoretical and methodological traditions that are all too often placed in opposition to one another (Gerber 2013, 2014). This approach makes it possible to, for example, bridge the long-term division in historical sociology initiated by Wallerstein (1974) and Brenner (1976), a debate that is often too easily interpreted as representing two opposite poles for explaining the origins and evolution of capitalism; while the former emphasises the role of world trade, the latter emphasises changes in rural class relations. With deference to Arrighi (1998) and others (e.g. Denmark and Thomas 1988; Anievas and Nisancioglu 2015), we aim to move beyond such scholarly constraints by analysing debt-driven (but not debt-centric) historical socio-ecological transformations. Furthermore, we give attention to the connection between debt and rural environmental change, a question that is rarely theorised about or analysed with respect to the historical political economy (but see Gerber 2014).

### Swidden commons as a lived environment

Why study swidden cultivation? How can a historical study of Nordic swidden cultivation contribute to theoretical debates about capitalism's causes and effects? A scoping of these questions begins our analysis. The study of Finnish swidden commons allows us to analyse what kind of social system was lost, and on what basis, and how a capitalist order was built in its place. Furthermore, there remains an image of swidden cultivation as a primitive, ecologically destructive and unproductive form of cultivation. It is important to re-study the swidden commons, as the negative assessment contributes to a legitimisation of the deforestation caused by historical and present-day forestry capitalism (Kröger 2014; 2016a; Kröger and Raitio 2017).

Following Myllyntaus, Hares, and Kunnas (2002, 267), swidden cultivation can be defined as a method of 'cutting living trees to clear land, burning the biomass after letting it dry and planting a crop in the ashes in an appropriate season' (for a good overview of the different meanings related to swidden, see Mertz et al. 2009). In the early modern era, southwest Finland was engaged in proto-industrialism and permanent agriculture on privatised lands, while the peripheral eastern parts of the country, like Kainuu, practised swidden cultivation in common forests. Finnish swidden cultivation was based on rotating the cultivated forest areas in 15–30 year periods. This cyclical character of swidden cultivation has sometimes strengthened the image of its primitiveness (Soininen

1974, 54; Ruuttula-Vasari 2004, 133). However, when land was cultivated in a shifting system and on small plots in a large enough area, a mixture of forests of different types formed a mosaic where food was produced – a different type of landscape in comparison to the European ideal of cultivated open fields. Thus, swidden cultivation required large forest ecosystems that could be used freely, self-sufficiently and regularly. If these conditions were met, swidden cultivation could be sustained with low capital-intensity, a simple means of production and labour-intensive technics (Myllyntaus 1999, 90; Luttinen 2012, 106) – ‘an axe was enough’, as one anthropologist put it (Sarmela 1987).

Under certain conditions, swidden cultivation can be a socially and ecologically sustainable mode of cultivation, as analysed by several historical and contemporary studies focusing on different regions of the world (e.g. Otto and Anderson 1982; Dove 1983; Kleinman, Pimentel, and Bryant 1995; Fox et al. 2009; Bruun et al. 2009; Thaler and Anandi 2017). A review of the existing historical swidden studies pertaining to Finland illustrates how the most valued swidden commons was actually an immaterial one (e.g. Soininen 1974; Sarmela 1987; Heikkinen 1988, 1997, 2000; Myllyntaus, Hares, and Kunnas 2002; Björn 2003; Ruuttula-Vasari 2004). The shared common knowledge of former generations guided the new generations to use effective cultivation technics, choose the appropriate seeds for the right soil and follow appropriate common rules and codes. Similarly to other historical as well as present agricultural commons-based resource systems (e.g. Wade 1987; Ostrom 1990; De Moor, Shaw-Taylor, and Warde 2002; Linebaugh 2008), Finnish swidden cultivation was regulated by shared common norms, rules and sanctions, and practised mostly by households, but also larger cooperative holdings were formed. Thus, contrary to widely shared beliefs, swidden commons was not an open-access or unregulated system in which forests could be burned without restrictions. The cyclical character of swidden cultivation required both shared common rights and planning, which guided the long-term sustainability of production.

From an economic perspective, swidden cultivation could match contemporary permanent field cultivation. For example, one swidden method, known as the *huuhta* method, outweighed the yield of any contemporary form of agriculture when combined with a particular highly nutritional rye variety, offering even ten times higher yields than a typical crop planted in a permanent field. As a sign of the robustness of this economy, during the eighteenth century swidden cultivation in eastern Finland occasionally produced more grain than was locally needed and the area acted as a grain exporter to the west coast, where livelihoods were based on permanent agriculture, tar production or ship building (Myllyntaus, Hares, and Kunnas 2002, 276).<sup>1</sup> Swidden cultivation was the most profitable form of cultivation available, and it offered subsistence living with a relatively moderate labour effort. The practice was embedded in local soils and cultivation possibilities: it was easier to clear a swidden plot than a permanent field given the stony and morainic soil. Furthermore, other means of livelihood, such as fishing and hunting as well as construction and repair work, could also be practiced alongside swidden cultivation – and it also left time for leisure (Sarmela 1987; Heikkinen 1988, 111–112; Myllyntaus, Hares, and Kunnas 2002).

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<sup>1</sup>The exporting of grain from eastern Finland did not, however, constitute a permanent trade relationship with the west coast and likewise did not function as a form of commodity production.

Finnish swidden cultivation did not cause environmental damage (Lehtonen and Huttunen 1997; Myllyntaus 1999, 92; Luttinen 2012, 112) compared to tar capitalism that replaced it. Swidden cultivation and the pasture organically related to it enriched biodiversity and multiplied the number of life forms found in a forest. To some extent, swidden cultivation had a positive effect on the soil and water systems because the ash decreased their acidity. More importantly, swidden cultivation created rich cultural biotypes and enriched the flora and fauna of coniferous landscapes with deciduous trees, groves and meadows. After cultivation, the swidden fields served as pasture land for cattle and attracted birds, rabbits, deer and elk for hunters. The new flora also provided new commons, such as berries and birch, whose bark could be used for several different purposes (Sarmela 1987; Myllyntaus 1999; Myllyntaus, Hares, and Kunnas 2002, 277; Tasanen 2004, 75).

The 'lived environment' (Taylor 2014) of the boreal swidden created a particular time-space understanding. The lived environment of swidden cultivation was created as an ecological process that could be observed: if sustainable rotation periods were followed, those who lived longest could see the same swidden burned two or three times. Thus, the rotations also framed people's conceptions of time and the future, which meant that the time horizon of this lived environment differed from that of modern agriculture. Compared to the short-term understanding of time in modern societies (a timeframe that can identify swidden cultivation only as ecologically destructive), the swiddeners understood their daily practices (burning, cultivating and reforestation) as part of a 'natural' rhythm of time, generations and nature (Ruuttula-Vasari 2004, 139). In this sense, swidden cultivation did not take place in the linear time of modernity, but formed a different political ontology (see Blaser 2013).<sup>2</sup> Swidden commons were not monocultures, or anthropocentric economies, but in certain historical contexts they sustained multiple lived environments for different species, being thus more akin to the South American Buen Vivir's *auyllu* practices of community (see Gudynas 2011) than to capitalist world-ecologies. Indeed, an important spiritual and cultural commons was linked to swidden cultivation. As swidden cultivation retained the forest cover, the spiritual, syncretic and pre-Christian forest beliefs as well as the cosmologies, worldviews and practices, remained a part of daily life (see Letonsaari 2009).

These cosmologies that supported the commons arrangement started to erode rapidly as swidden cultivation began to give way to deforestation for tar capitalism: they were replaced by a new time-space understanding. This tells us much about the importance of ideological shifts in creating new capitalist frontiers, a theme emphasised by world-ecology (see Moore 2018). Today, there are fewer rich landscapes and lived environments typical of the times when swidden cultivation was practiced, not least because the forest industry prefers growing mostly coniferous tree plantations (Myllyntaus 1999; Ruuttula-Vasari 2004, 140). Such disappearances of existences were a necessity for the birth of tar and forestry capitalism, as were the unleashing of the three workhorses of tar capitalism – debt, dispossession and death – to which we will turn next to explain the process by which the swidden commons were destroyed and tar capitalism took over these lands.

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<sup>2</sup>By referring to political ontology here, we want to emphasise the underlying ontological conflicts between tar capitalism and the swidden commons as processes operating in the same Kainuu region, with each process producing a different ontological world that had its own political projects (political ontologies) (see Blaser 2013, 553 for a detailed discussion).



## The rise of the tar frontier

The rise of the European colonial maritime powers, first the Dutch then the British, created an expansive world-scale network of resource demand and division of labour (Wallerstein 1974; Braudel 1985; Arrighi 1994) and connected even the outermost Northern peripheries into the capitalist world-ecology (see e.g. Moore 2010b, 2010c). In this division of labour, the Nordic countries specialised according to their location and resources: Norway had timber, Sweden had iron and charcoal, and Finland had huge quantities of tar. The transformation of Kainuu had less to do with the local commoning practices than with the need of the maritime Empires for tar to protect the wooden hulls, boards, and ropes of their warships and other ships from water damage. By forming an archaic chemical industry that produced tar from Finland's forests, an easily transportable commodity could be offered for imperial needs. The world-capitalist logic behind this type of production had a significant impact on the trajectory of the early modern Finnish economy as an exporter of archaic forest products, and, in the context of Kainuu, it had a major influence on how the region's forests were valued and used: they were reduced to their (at that time) most readily available and exportable form and value (Åström 1988, 12; Kuisma 2006; Kunnas 2007; Myrdal 2007).

The casting of Kainuu as a tar periphery in Finnish national political geography took place as a consequence of a series of prior world-historic and national events. First, after the Great Northern War (1700–1721), the first generation of Finnish tar production areas centred around the south-eastern export town of Viipuri (Vyborg – where tar shipping had a long history, dating back to the sixteenth century) were lost to Russia (Finland was then still part of the Swedish Empire) and slowly decayed, with the tar frontier then shifting to northwest Ostrobothnia. In the early nineteenth century, tar production in this second Finnish tar frontier had led to serious regional deforestation, and new forest lands were needed. The tar frontier rushed to meet the third and last frontier, Kainuu forest commons in the east. Kainuu's huge pine tree forests, cheap labour force and suitable water transportation network constituted the closest and easiest expansion site. The resulting transformation of Kainuu was massive. While at the end of the eighteenth century life was based on self-sustaining swidden commons, by the end of the nineteenth century, Kainuu's social life was fundamentally reorganised around tar-burning: in the final decades of tar production, Kainuu produced close to two-thirds of Finnish tar, that is, 50,000 out of a total of 80,000 tar barrels exported (Hautala 1956, 261–263; Turpeinen 1985, 272; Åström 1988, 60).

Thus, the world-systemic developments created the conditions for Kainuu's tar frontier to rise. What followed locally was more than a century of political, social and economic rearrangements and strategies that kept the extractive and expanding tar production going. Kainuu had a tradition of tar burning already in the eighteenth century, however, this small-scale household production was almost exclusively used for local needs. At the turn of nineteenth century, when Kainuu was increasingly meeting the world-economic demand for tar, in the hope for a small amount of extra income and exchange commodities (e.g. salt, coffee), those of Kainuu's peasants living closest to the west coast started to deliver tar to the western trading town of Oulu. In the early 1840s, the Finnish state levelled out the rapids of Kainuu's rivers, which made it possible to transport tar on a large scale and opened up the rest of the region's extensive forests for tar burning.



During the 1860s, an enclosure of Kainuu's forests was implemented in order to curtail forest damage caused by tar production; this did not, however, end the destructive expansion of tar burning. The extractive era of tar capitalism only came to a close when the Finnish railway network reached Kainuu in 1904 and the monopolistic control of the Oulu merchant houses was finally broken, allowing Kainuu to gradually benefit from the making of a more modern forest industry. Thus, the years of between roughly 1840 and 1900 can be described as the period of extractivist tar capitalism in Kainuu.

Before moving on to a more detailed analysis of the key power strategies – debt and dispossession – behind the extractivist tar-burning, we will next provide an analysis of the essence of the tar frontier, which was based on two characteristics: an extremely laborious production process, and death and hunger, which culminated during the catastrophic famine years of the 1860s – the decade that earned Kainuu, a land of formerly self-sufficient commons, the nickname *Nälkämaa*, the 'Hunger Country'.

### **'A cancer upon earth': death and the tar frontier**

With respect to preindustrial types of European forest use, tar production came closest to causing total deforestation (Moore 2010b; for a more detailed analysis, see Kunnas 2007). The yearly production by just one peasant demanded the cutting down of two thousand young (30–40 year old) pine trees at their peak growing age, and while only the lowest ten metres of the trunks were used, production was exceedingly wasteful. Wide forest areas were clear-cut to the extent that 'not even a splint was left to light a fire in to the cottage' (Kajander 1902). The clearing of pine forests for tar production reduced biodiversity; after cutting down the forests for tar, no ash or natural fertilisers via the subsequent pasturing of the area were left to enrich the soil. In addition, the pine tree forests were often replaced by spruces, which could not prosper in the unfertile and morainic soil (Enbuske 2010, 247). Tar thus represented a frontier that brought extra-human death with it: entire local webs of life and lived environments were extinguished.

Tar production was an exceedingly laborious process. The whole cycle of tar production lasted for close to five years. The production process started by barking the resinous pine trees (Scotch Pine, *Pinus silvestris*) every winter. After four years (the longer the tree was producing resin the better), the trees were cut down in the wintertime. In early summer, the logs were then carefully stacked in a high pile, which was then covered by peat and soil. This formed the tar burning kiln, or 'tar tomb' (*tervahauta*), as it was called in Finnish. Next, the slow burning of the kiln took place, which lasted for several days and was led by an experienced specialist, the 'master of the kiln' (*hautamestari*), often a highly respected village elder. The process produced liquid tar, and, finally, the tar trickled into tar barrels, and the three-week-long transportation process with rowing boats to the city of Oulu could begin (see, e.g. Paulaharju 1922; Kunnas 2007; Turpeinen 2010).

Tar formed a frontier, in the fullest meaning of the word: it entered the lifeblood of the Kainuu region, the whole web of life, including lives, bodies and ecosystems. It marked the political-geographic and economic frontiers of a region: to the north of this frontier was Lapland, with its own kind of system, to the east Russia, and to the south and west the agricultural and early industrial areas of Finland. 'The people of Kainuu were born and bred in tar, they swam and lived in tar, and finally, they died in tar like flies', said Kianto (1920), a Finnish author, about life in nineteenth-century Kainuu. Simply put, it was all

about tar. Contemporaries described tar burning using such dismal phrases as ‘the curse’, ‘a cancer upon the earth’ or ‘the downward spiral of addiction’. They were referring both to the social and ecological conditions under tar capitalism. One travelling journalist wrote:

The people of Kainuu burrow in their tar tombs like a mole its nest, who, with its miserable eyesight, cannot understand whatsoever what is happening under the sun. People are delighted if the tar tomb produces even something, and satisfied with what the bourgeoisie gives them. They burn tar like it has penetrated into their *human nature*. And when the day ends, they don’t blame the tar burning; instead, they moan that the forests are disappearing and they have *debt in their backs*. (Kajander 1902, emphasis ours)

The quote captures something essential about the fundamental change in the logic of forest use. The environment was imbued with a new kind of rationality. The forest commons no longer existed for the community. Instead, the commons and community were now marked for intensive tar burning. The forest was valued with terms, which Moore (2015) has labelled as central to the rise of ‘Cheap Nature’: the modern separation between humanity and nature was enforced by ‘reducing the web of life to a series of external objects’ (Moore 2016, 87). Thus, the peasants of Kainuu were now mapping, surveying and calculating the trees and their value with the expectation of future monetary returns, which were fatally dependent on the radical fluctuation of world market prices, as is demonstrated below. Simultaneously, the human labour, previously produced from and for the forest commons, was now abstracted and valued in terms of the tar volume produced.

The tar frontier decreased significantly the amount of leisure time and the time spent engaged in other economic activities. In this sense, swidden cultivation was replaced because large-scale tar production was a quite laborious form of proto-industry, and as such, appropriated most of the households’ time. Summer was the most crucial period, since the burning and transporting of tar took most of the short summer, and cultivation was often neglected. The lengthy transportation times also differentiated Kainuu’s tar frontier from the earlier two Finnish tar regions; previously, production had been situated close to the coasts and transportation had taken much less time (see Kaila 1931, 6–7). Instead of swiddening, which was supported by other forms of livelihood, like hunting and fishing, households were intensively mobilised in tar production. In this process, the former level of self-sufficiency in terms of food was lost and people became heavily dependent on grain bought from the market (Paulaharju 1922; Solantie 2012, 160; Nummela 2016).

The expansion of the capitalist tar frontier experienced a turning point in the 1860s, due to world-systemic events that led to a rapid boom-bust cycle with all its negative impacts. The demand for tar increased significantly when the end of the Crimean War (1853–56) stimulated European trade anew, and when the American Civil War (1861–65) brought to a halt the newly established North American tar frontier. Wars near and far are thus essential to explaining the commodity frontier, and particularly, global inter-frontier dynamics and fluctuations in the flow of commodities. The early 1860s represented the greatest boom years for Finnish tar production: the price of tar tripled and even quadrupled. This led to a massive increase in Kainuu’s production, as well as to a short-lived production period in the post-frontier context of Ostrobothnia. In Oulu, one barrel of tar produced by a peasant was equivalent for more than the price of one barrel of grain, and the record prices introduced such luxuries as coffee and sugar to the most faraway

villages of Kainuu as symbols of new, modern times. However, tar's price on the world market fluctuated radically. In less than two years after the peak, the price had dropped by half. In 1863, Finland exported 234,000 barrels of tar, while only a few years later, in 1867, the amount had decreased to 153,000 barrels (Hautala 1956; Nummela 2016, 37–45). After this turn of events, production declined rapidly elsewhere, except in Kainuu, where tar burning remained the main mode of production for decades to come.

The expansion of the tar frontier caused not only extra-human death, but was also deeply connected to human death, which in Kainuu, as elsewhere in Finland, came in the form of a disastrous famine.

Finland experienced the last major famine in modern Europe, known as 'The Famine of 1866–68', or 'The Great Hunger Years'. During the famine, short-term population losses reduced the Finnish population of 1.8 million by more than 10 percent; it is estimated that hunger and diseases caused the deaths of 200,000 people. The well-studied causes of the famine include complex and intertwined political, economic and ecological factors (see Turpeinen 1979; Häkkinen 1992; Pitkänen 1994; Voutilainen 2016). One recent study has demonstrated that there was a significant overlap between mortality rates and the areas where the tar production concentrated (Nummela 2016). There was a severe crop failure already in 1862, but the coincidental and exceptional boom-year incomes from high tar prices made it possible to buy expensive grain from the market. During the first years of the 1860s, tar saved many lives (Pihkala 1969, 46; Nummela 2016, 39, 53). But only for a while.

In 1867, most regions in Finland experienced either a near total crop failure or an extremely poor harvest caused by a late spring and early autumn frost. The crisis hit the population living in the tar areas severely. Tar prices had now bottomed out while grain prices had peaked: whereas in 1862 one barrel of tar was equivalent to more than one barrel of grain, in 1867 a tar peasant from Kainuu needed four barrels of tar to buy one barrel of grain. It has been estimated that in the boom year of 1862, tar constituted a livelihood for 90,000 Finns, while in 1868 only 30,000 could make a living from it (Nummela 2016, 29, 42). The difference is tragic: there was no way people whose livelihood was heavily dependent on tar, regardless of their social status, could adjust their production to meet these kinds of fluctuations. In the worst regions of Kainuu, nearly one in four persons died (Turpeinen 1986). 'Bodies were dragged in sleighs like log piles', one local observer reminisced about the winter of 1868 (Pulkkinen 1913). Importantly, it has been estimated that the famine crisis would not have been possible a century before, when swidden commons were still practiced (Solantie 2012, 99, 159–162). It was at this stage of the typical frontier boom-bust cycle, where the death inherent to such commodity frontier expansions started to reap its harvest, when death hit the most indebted and market-dependent people hardest. Inside the tar frontier, there was a frontier of death that first manifested itself at the extra-human level and then at the human level. Importantly, before large-scale death (of both human and extra-human nature) there was debt.

The massive number of human deaths in the 1860s in Kainuu proved essential to the expansion, intensification and reproduction of the tar frontier for an additional four decades. As Kainuu's people died in mass numbers (in the worst famine year 1868, every tenth person, and in worst regions every seventh person, died of hunger and diseases; see, e.g. Turpeinen 1985, 70–75), it provided opportunity for those in power to enclose the land, and the people most affected by tar expansion did little to resist such

enclosures, which were essential for the spread of a tar capitalism based on private property. This would not have taken place so easily if such a large number of people with ties to the forests commons and swidden cultivation had not died as a result of famine. The 'great hunger years' ensured that these robust economic-political systems of the commons were weakened to such an extent that people had to seek out other options for a livelihood (tar); in short, the prior communal systems, first weakened by tar capitalist relations and now by the mass death, collapsed.

### **Debt: rural indebtedness and the tar production system**

The tar frontier transformed self-sufficient Kainuu into a world-ecological zone of extraction in which social life was dependent upon the fluctuation in world market prices. In addition, it created tar capitalists in coastal towns. Historically, commodity frontiers were often organised based on an exploitative or antagonistic town-country relationship (e.g. Braudel 1985, 27; Moore 2003, 334); towns were the 'organising centres' (Braudel 1985, 36) of merchant capitalism. Oulu, the most significant tar-trading town in Finland, controlled the tar production networks in the rural areas, the most important being in Kainuu. Thousands of barrels of tar flowed from eastern Finland to Oulu, and then from this urban centre to Stockholm and Lubeck, and Amsterdam and London. Oulu's merchant houses, 'the tar bourgeoisie', became wealthy and powerful largely by serving as intermediaries in the tar trade and gathering merchant capital; the city became the world's largest tar harbour.

Because the annual price of tar fluctuated considerably, and because the merchant houses also needed capital for their investments in such activities as shipbuilding, the tar bourgeoisie were themselves often indebted to merchant houses in Amsterdam or London, which in turn increased the pressure to tighten the credit terms for the tar peasants (Hautala 1956, 236; Aunola 1965). This type of world-scale 'debt hierarchy' was a central driver behind the rise of modernity. Importantly, the indebtedness of European kings, nobles, merchants and explorers increased the pressure at the bottom of world hierarchy. The search for funds to pay debts to those higher up on the pyramid led, for example, to tighter control over the working classes, extensive violence in the colonies and debt peonage in Europe's peripheries. In fact, the debt incurred as a result of war making has been identified as the root cause of the European powers' colonial conquests – war debt created more war because of the debts of the elites to banking houses (Graeber 2011; Beckert 2013; Patel and Moore 2017). Expanding the tar frontiers promised to offer double yields to soothe the appetites of this dubious capitalist relationship: tar was used for warships, while the high and rapid profits made it possible to pay prior debts that those farther up the debt-hierarchy ladder had already incurred. Tar peasants held none of the bargaining power of the tar bourgeoisie: tar had to be delivered and sold every summer to pay off the existing debt and survive over the long winter. Thus, although in good years tar brought an income, and the richest peasants could pay off their debts and even employ temporary workers in their tar tombs, the debt owed to merchants also kept the frontier expanding through times when the price of tar did not even compensate for the yearly costs of production (e.g. Kauranen 1999; Turpeinen 2010).

The indebting of the peasantry took place in two stages. First, the tar merchants brought individual peasants under their control through a special debt system called

*majamieslaitos*. Officially, the local tar trade was designated to follow the principles of free markets and take place in Oulu's town square, where the price was supposed to be negotiated between producers and buyers. In practise, however, this never took place. In the beginning, the promise of gaining profits attracted peasants, and when some made extra incomes by delivering tar barrels, others followed. During the first stage of indebting the peasantry, when a peasant arrived in Oulu, a guesthouse, food and alcohol were offered, and finally, a tar contract (*tervakontrakti*) – soon to be known among contemporaries as a 'cursed document' – was drawn up and the peasant received advance payments (a classic form of labour control) in salt, grain and other necessities against the tar to be delivered the following year. However, it was often the case that the peasant also needed an extra loan to sustain himself and his family over the long winter (Aunola 1965; Kauranen 1999, 114; Turpeinen 2010, 149–151).

This first stage of the debt relationship pleased both sides: the peasant survived the harsh winter, and the merchant knew the loan would guarantee that a certain number of tar barrels would be delivered the following summer. At least from 1830s onwards, however, merchants began adding interest to the loans more as a rule than an exception (e.g. Kauranen 1999, 111–122). The second stage of indebting the peasantry was characterised by the shift from a credit economy to an 'economy of interest' (see Graeber 2011, 332). Soon, as the peasants saw that the bourgeoisie were getting richer, they became distrustful of them. The bourgeoisie, in turn, started tightening the contract terms after experiencing severe operating losses (during the war years of the 1850s and in the early 1860s), as the price of tar on the world market first boomed and then decreased dramatically. In consequence, interest-bearing debt enabled the merchants to control more tightly the production networks of hundreds of peasants, while the rural population sank ever deeper into debt peonage (Turpeinen 1985, 284; Kauranen 1999, 112–119; Nummela 2016, 40, 48). The local geography of such debt was not equal, with more peripheral regions typically becoming ever more indebted, and thus less powerful to resist the exogenous relations of merchant capital.<sup>3</sup> As argued by Gerber (2014), adding interest in the debt relationship has historically increased the pressure to produce a greater agrarian surplus, which in turn can drive peasants to intensify extractive processes, with ecological consequences. In Kainuu, interest reinforced two aspects of tar capitalism. First, it tied the tar peasant's life tightly to a single merchant house: if a peasant tried to sign a new contract with some other merchant, all of the peasant's accumulated debt was instantly exacted in the form of foreclosure (Hautala 1956, 235). Second, it made the lives of indebted peasants extremely vulnerable to 'external shocks'. If, for example, problems occurred with production or transportation (there were several dangers on the water route), and less tar was delivered than promised, then peasant had to work harder and deforest even more intensively the next year (Hautala 1956, 233; Kauranen 1999, 117). In Kainuu, interest-bearing debt was an important reason for the destruction of forests to produce tar.

<sup>3</sup>The further east a peasant lived, the greater the expenses of transportation, and thus, the greater the pressures of slipping into debt peonage. For example, in Kuhmo, the easternmost town of Kainuu, based on the examination of court cases the ratio of tar debts to all debts that were brought to the court was 33 percent in the 1850s and 68 percent in the 1890s (Heikkinen 2000, 119). On the west coast, in comparison, tar burning did not cause such profound levels of rural indebtedness, as the peasants were wealthier, transportation costs were lower and tar burning was only one form of production – all being factors that made the merchants less powerful vis-à-vis the peasants (Aunola 1965; Kauranen 1999).

Rural indebtedness, first introduced as a power relation between town and country and between merchants and tar peasants, in its second stage also changed the social relations and economic interactions among rural people themselves. Former mutual credit systems, where some goods or services had been exchanged without the need for a single state-authored currency and with delays in providing compensation for the product one had received (i.e. paying for a horse with next year's grain and game), were now replaced with a system of monetary exchange and interest-bearing debt relations – a capitalist transformation typical of early modern societies (Markkanen 1977; Muldrew 1998; Graeber 2011; Fontaine 2014). This transformation took place, for example, through a process whereby the wealthiest peasants learned the new rationalities of interest-bearing debt while trading tar with Oulu merchant houses, and with this experience established themselves as 'village bankers'. These new creditors started to document the amount of debt and interest owed in detail through bookkeeping (which had not happened before); furthermore, when debtors became insolvent, the creditors called for debt collection to be executed by officials who were not from the village itself. Debt's new power to organise social life was most evident in courts: whenever a problem of repayment arose, a promissory note presented by the creditors solved disagreements as a general rule to the detriment of the debtor (Heikkinen 1997, 107–109; Hemminki 2014, 164–168). This is how the capitalist debt spread also to the Kainuu region and throughout all levels of society: from the world-system level to the local level, social relations now became bound up with capitalist debt relations.

For the purposes of our argument, this transformation brought on by new capitalist debt relations is important for two reasons. First, it shows how the logics of world trade and merchant capital penetrated as a transformative power into the social relations of peripheral communities. Rural indebtedness is integral to the functioning of merchant capital, a mechanism that can intensify the existing forms of peripheral production and incorporate them into the capitalist world-system (Mielants 2007; Gerber 2014; Anievas and Nisan-cioglu 2015). Simultaneously, merchant capital can act as 'a powerful lever in forming the preconditions for industrial capital' (Marx 1981, 745) – this was exactly what happened in Kainuu, as we describe in the last two sections. Through the introduction of debt, Kainuu shifted from the commons and common rights to abstract modern rights, which are rooted in such key concepts as private property, money and communal hierarchies. Second, because law, property and social power diverged from common rights, and thus from the lived environment of the people, so too the relationship between human and extra-human natures changed. For the first time, the local landscape was measured – familiar modern technics that reinforce the separation between human and extra-human natures (see Moore 2016) – through debt-based bookkeeping, whether conducted by village bankers or merchants. Thereafter, when problems with repayments occurred, the lived environment of the indebted (a given family's swidden plot and cottage) was abstracted and transferred through foreclosure into the private property of the creditor. Expanding the frontier of capitalist debt was thus a key process explaining how the tar frontier and the social power based on private property were expanded in place of the former swidden commons. However, only when the actions of global capitalists and regional merchants were joined by state actions could forest and swidden commons be erased, with the consequence being the creation of 'free labourers', a mass of landless poor, as we shall next discuss.



## Dispossession: the debt- and enclosure-making state

If tar was ‘a cancer upon the Earth’ for the locals, why did people stick with it until the beginning of the twentieth century? Why did they not resist and escape the debt peonage and rely instead on swidden cultivation during the period when the tar frontier was expanding from the early nineteenth century onwards? The key reason for this was that the simultaneous imposing of a modern state structure upon the Kainuu region made it almost impossible to return to the practice of swidden commons or to develop other forms of production. The state (1) started to demand that taxes be paid only in cash and (2) forced a process of enclosures via a parcelling of the common lands into private properties and state forests. This created, on the one hand, heavily indebted (in the modern sense of a cash economy) landed peasants who had to produce tar to obtain any money, while the bulk of the population was dispossessed of their access and common rights to the land, so they could no longer continue with swidden commons.

When the Finnish state implemented monetary reforms during the 1850s and 1860s, it began collecting taxes solely in cash and paid on an individual basis. Since the modern Finnish banking system did not yet extend to Kainuu, the only place to obtain cash was from the Oulu merchant houses. Consequently, tar was produced to obtain cash from merchant houses to pay the taxes (Heikkinen 1988, 96–97, 2002, 30; Kuisma 2006, 36–37; Luttinen 2012, 138). Thus, state, with its taxation capacity, was also crucial in the transformation from swidden cultivation to tar production, and it offered leverage to merchant houses when the taxes kept the tar spiral going. Such moves follow the general expansion of the modern state and have led to the demise of swidden commons around the world (Scott 2009), with Kainuu being no different in this sense.

While the taxes guaranteed the continued need for tar burning, the state interfered in the fate of Kainuu via another important mechanism as well: enclosures. The state-led parcelling of prior common forests and lands into private properties and state forests (called in Finnish *isojako*) was a form of enclosure, which dispossessed those who had been using the forests as commons and turned them either into landless ‘free labourers’, an impoverished group of poor people, or into land-owning peasants with private land rights. The parcelling of the land made more than 80 percent of the population of Kainuu juridically landless (Turpeinen 1985; Alapuro 1988). This enclosure ran parallel with the expansion of the tar frontier, with its ensuing debt and death, and reached its peak in Kainuu during the great hunger years of the 1860s. *Isojako* was the last nail in the coffin marking the end of the forest commons, since the landless lost their right both to the swidden commons and tar burning, and the newly-created class of land-owning peasants focused on producing tar from their ‘own’, recently acquired forests (Heikkinen 1997, 2000). This signified a dispossession, since those classified as landless lost their rights to the common forests, which, in many practical respects, had been their best hope for surviving the harsh conditions. Class cleavages were fortified by the state’s law-making during the *isojako* of the 1850s–1870s, which forbade tar burning by anyone lacking private landed property. Forest guards, who now came from outside the region and had no prior connection to local communities, were hired to guard the forests from being used ‘illegally’ (Ruuttula-Vasari 2004). It has been argued that this type of class violence is the key driver by which commodity frontiers are expanded and ‘free labourers’ are created (e.g. Linebaugh 2003).



The damage caused by tar expansion was used to call in the state to interfere and enclose commoners off from these lands. These enclosures were based on a firm belief in the economic harmfulness of the commons and the superiority of permanent field cultivation over swidden cultivation (as documented, e.g. by Tasanen 2004, 354; Luttinen 2012, 147). In a discourse akin to the ‘tragedy of the commons’ (see Hardin 1968), a discourse fiercely promoted by political and economic elites throughout history (e.g. Perelman 2000; Linebaugh 2014), the common organisation of forests, not the debt-driven burning of tar – was seen as the root cause of problems. This tactic of blaming those suffering the most in environmentally ravaged areas for the damages actually caused by the expansion of capital, is a common and typical feature in peripheral regions, as political ecology has documented (Carney and Watts 1990), e.g. in Southeast Asia’s swidden areas (Fox et al. 2009). Both swidden commons and tar production were forbidden based on an argument that they would be replaced by private field cultivation; yet, in Kainuu they were first replaced by a boom in forest sales, wherein merchant houses<sup>4</sup> bought lands from indebted or foreclosed peasants at low prices, and second, by the modern forest industry, which, in the end replaced both swidden cultivation and tar production (e.g. Ruuttula-Vasari 2004, 132–133). Both tar making and swidden cultivation were framed as destructive and wasteful by the budding forest industry, which was the real winner of the enclosures, concentrating the new ownership of lands in the hands of a few.

State coercion combined with trade expansion have been identified as a general and crucial process in the birth of capitalism (Anderson 1974; Wallerstein 1974; Teschke 2003, 197–209); Kainuu provides a telling example of how this worked in practice. While state power has always played a significant role in historical societies’ capacity to utilise natural resources, Parenti (2015) has coined the term ‘environment-making state’ to emphasise the role of the technical-scientific moves taken by states during the evolution of capitalism in order to deliver the use values of extra-human natures needed for the processes of capital accumulation. To broaden this argument, we have argued here that modern states seem able to destroy and make environments even more profoundly through monetary and land tenure policies. Although the Finnish state apparatus in the nineteenth century (during the autonomous Grand Duchy period as a part of the Russian Empire) was in many ways territorially ineffective, it could still decide whether forests were burned for tar, turned into fields or used for slash-and-burn agriculture – even in such hinterlands as Kainuu. In Kainuu, the state was present in the expanding capitalist appropriation of resources by helping dispossess the local people of their prior lived environments and livelihoods. There was resistance to this process, but state domination and coercion were used to quell it (Heikkinen 2000; Ruuttula-Vasari 2004; Toivanen 2015a). While the tar frontier started eroding Kainuu’s swidden commons through the mechanism of debt, the state, through its environment-making ability, ensured that this region remained a resource periphery. Being a God-forsaken hinterland from the perspective of the economic and political elite, it was Kainuu’s role to serve as the country’s commodity frontier so long as there was some kind of demand for tar. For this reason, enclosures and restrictions did not stop tar burning; instead, the destruction of Kainuu’s forests continued

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<sup>4</sup>At the end of the nineteenth century, Oulu’s merchant houses reorganised their operations to take advantage of the rising forest industry. To ensure the supply of timber, the new hybrid forest corporations now focused on new techniques for appropriating forest resources. In Kainuu, corporations owned 10 estates and 800 hectares of land in 1885, but 665 estates and 260,700 hectares in 1915 (Karjalainen 2000, 100–103).

until the early twentieth century. This history of the destruction of the forest commons by the tar frontier still affects Kainuu to this day, as the region remains Finland's most impoverished and is frequently cast as a 'resource frontier' that is somehow 'required' to accept, for example, dubious and speculative environmentally hazardous mining projects (Kröger 2016b).

### **Conclusion: the three Ds (debt, death and dispossession) and world-ecological transformations**

The analysis provided here makes novel empirical and theoretical contributions. We have showed how the linking of particular region to the modern world-system as periphery, the creation of capitalist debt relations and the state's role in environment-making were together the essential factors and processes replacing the swidden commons and expanding tar capitalism. The rise of tar capitalism was a dramatic event in Kainuu's socio-ecological relations. Rural indebtedness was the key power strategy driving the destructive proto-industry and appropriating human and extra-human natures. In premodern forest use, it was tar production that came closest to total deforestation, making the lived environment of rural people extremely precarious. Debt impacted the total lived environment of human and extra-human natures and brought undemocratic death and class-forming dispossession with it. The trinity of tar capitalism – European imperialism, northern merchant houses and the Finnish state – was built via the three workhorses of capitalism – debt, death and dispossession. We suggest also analysing these three Ds in future research, as they can expose other complex dynamics in capitalist frontiers.

The important theoretical lesson that can be learned from the history of Kainuu is that the creation and evolution of capitalism in place-specific conditions is not caused only by exogenous (e.g. the impact of world trade) or endogenous factors (e.g. changes in class and property relations), but by both *combined*. Here, we are referring especially to the traditions of world-system analysis and so-called Political Marxism and their imagined antagonism as competing theories. Several scholars have argued that sound theoretical and empirical explanations cannot be created by using just one of these two theories (Dennemark and Thomas 1988; Arrighi 1998; Mielants 2007; Anievas and Nisancioglu 2015). Brenner's (1976, 1977) original argument should not be understood as criticising Wallerstein's (1974) model, which emphasised world trade, as expanding upon it to include an analysis of the existing peripheral class relations and social conditions and how they affect the social transformation that is initiated by the exogenous factors. The subsequent scholarship often misunderstood this point and saw Brenner as offering only a competing explanation (see Arrighi 1998). In Kainuu, we have identified both Wallersteinian and Brennerian strategies operating together in the creation of capitalist societies; we added a level of analysis that demonstrated why the ecological conditions should constitute a fundamental element in this kind of analysis.

The rural debt relations propelled by Nordic merchant capital appropriated the local commons-based production, and worked in Marx's terms as 'a powerful lever' by creating the possibilities for merchant houses to purchase large expanses of forestland and invest in industrial production. Simultaneously, debt-driven tar production and its disastrous ecological effects increased the pressure for state enclosure of the commons, which then created a class of land-owning peasants and a mass of 'free labourers', and thus, the

conditions for capitalist social property relations – so strongly emphasised by Brenner (1976, 1982) and Political Marxists (e.g. Wood 2002; Teschke 2003; Dimmock 2014). The form of debt peonage that evolved before the enclosures enforced the dispossession of the land-owning peasants (see also Ågren 1994; Gerber 2014). After the enclosure of the commons, the markets no longer served as one possible opportunity in cases when there were surplus products (e.g. tar, grain or butter) to be sold, but instead, the markets increasingly served as a form of economic compulsion wherein people had to sell their labour power to reproduce themselves and their families (see e.g. Wood 2002).

Yet, not even a combined Wallersteinian-Brennerian theory can encapsulate the details of what happened in Kainuu in and after the nineteenth century. After the demise of the swidden commons, some landless persons became crofters, some just wandered and knocked on people's doors as beggars, many found wage labour in the expanding saw mill industry and even more were wiped out financially and suffered premature death. As in the rest of Europe, crossing the Atlantic in part helped solve the problem of Kainuu's surplus population, motivating a number of people dispossessed from the commons and with no direct access to wage or land to search for economic opportunity elsewhere. It was only after the Oulu merchants' powerful monopoly over Kainuu's lived environment slowly dissolved at the beginning of the twentieth century that Kainuu could follow the rest of Finland, with a more diverse local economy and industries being built up and put into place. This happened mostly due to the inflation caused by the First World War, which eliminated peasant indebtedness in Kainuu and ultimately ended the power of merchant capital.

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